sensor, whereby the input sensor is associated with the n functions and whereby the n functions corresponds to n fingertips.

[0021] It is another objective of the present invention to provide an input sensor that is capable of detecting $m_1, \ldots, m_n$ motions respectively corresponding to n fingertips whereby the total number of selectable functions for the input sensor increases to

$$\sum_{i=1}^{n} m_i.$$

[0022] It is yet another objective of the present invention to select a function by selecting only one fingertip at a time and only the selected fingertip touches and activates the input sensor.

[0023] It is still another objective of the present invention to provide input sensors that are arbitrary small or input sensors that are substantially as small as the selected fingertip.

[0024] It is still another objective of the present invention to provide input sensors that are substantially larger than the selected fingertip, which touches and activates the input sensor.

[0025] It is still another objective of the present invention to provide input sensors with tactile stimuli.

[0026] It is still another objective of the present invention to provide a system and method in which it would be possible to successfully select a function in case the user is prevented from looking at the input sensor or the selected fingertip while the user selects and activates the input sensor.

[0027] It is still another objective of the present invention to provide an imaging means to image a part of said user's hand large enough to identify the selected fingertip that activates the input sensor.

[0028] It is still another objective of the present invention to provide a processing means to determine the selected function from the identified fingertip by the imaging means and the dependent relationship between the n functions and the n fingertips.

[0029] It is still another objective of the present invention to provide a processing means to determine the selected function from the identified fingertip by the imaging means and the dependent relationship between the n fingertips and $m_1, \ldots, m_n$ motions corresponding to the n fingertips.

[0030] The advantage of the present invention over the prior art is that the present invention enables one to increase the functionality of systems without necessarily increasing the number of input devices or input sensors. Another advantage of the present invention is that it allows a manufacturer to develop systems that maximizes the number of possible functions or actions of the system while minimizing the size of the system. Still another advantage of the present invention is that it would allow a user to use tactile information from touching the sensor with the selected fingertip, to select a function from a plurality of functions without looking at the controls.

BRIEF DESCRIPTION OF THE FIGURES

[0031] The objectives and advantages of the present invention will be understood by reading the following detailed description in conjunction with the drawings, in which:

[0032] **FIG. 1** shows an example of a dependent relationship between fingertips and functions according to the present invention;

[0033] **FIG. 2** shows an example of the method steps for selecting a function based on the selection of the corresponding fingertip according to the present invention;

[0034] **FIG. 3** shows an example of a dependent relationship between fingertips, motions and functions according to the present invention;

[0035] **FIG. 4** shows an example of the method steps for selecting a function based on the selection of the corresponding fingertip and motion according to the present invention;

[0036] FIGS. **5-10** show examples of different types of possible input sensors according to the present invention. FIGS. **5-10** also show exemplary selections of a fingertip to touch and activate the input sensors according to the present invention;

[0037] **FIG. 11** shows an example of the system according to the present invention;

[0038] **FIG. 12** shows an example of an image acquired through the imaging means according to the present invention; and

[0039] FIGS. **13-14** show examples of how the system and method of the present invention could be applied.

DETAILED DESCRIPTION OF THE INVENTION

[0040] Although the following detailed description contains many specifics for the purposes of illustration, anyone of ordinary skill in the art will readily appreciate that many variations and alterations to the following exemplary details are within the scope of the invention. Accordingly, the following preferred embodiment of the invention is set forth without any loss of generality to, and without imposing limitations upon, the claimed invention.

[0041] The present invention provides a system and method **100** for selecting a function from a plurality of functions with his/her fingertip. In general, there could be n functions whereby each of the n functions corresponds with n fingertips. For the purpose of the present invention, function has the same meaning as action or intent. As it is shown in **FIG. 1**, there is a dependent relationship between each fingertip and the corresponding function. The least number of dependent relationships is 2, i.e. when n is 2. The example shown in **FIG. 1** shows the fingertips of the left and right hand. Including all the fingertips it would be possible to define a maximum of 8 different functions, i.e. when n is 8. The determination of which fingertip should correspond to which function is completely arbitrary and simply a matter of choice or preference. The correspondence, i.e. the dependent relationship, between fingertip and function is usually preset in a system by the manufacturer. However, it is also possible for the manufacturer to allow the user of the system